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Third Trimester Predictors of Intra Uterine Fetal Growth

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Introduction

Foetal growth is the result of maternal availability of nutrients, placental transfer and its own growth potential.(1) The normal neonate is the one whose birth weight is between the 10th and 90th percentile as per the gestational age with no features of malnutrition and growth retardation.

Intrauterine growth restriction is associated with perinatal mortality and significant morbidity of surviving newborn. It is associated with an increased risk of still birth, adverse perinatal outcomes and neurodevelpomental delay.(5,6,7)

Early onset IUGR cases (which develop before 32 weeks) can be detected using Doppler ultrasound and delivery of such fetuses is indicated to prevent still birth.

Late onset IUGR (which develops after 34 weeks) have to be delivered timely from an unhealthy in - utero environment to avoid suboptimal perinatal outcomes.(8)

Doppler ultrasound markers of placental insufficiency especially increase in uterine artery pulsatility index is typical of early onset IUGR.

IUGR should be a cause of concern because they not only indicate an imminent risk of malnutrition and morbidity in women if child bearing age, but also signal of a high risk of malnutrition, morbidity and mortality for the newborn in the developing countries.

Aims & Objectives

The aim of this study is to pick up those foetuses that are compromised after 34 weeks of gestation mainly due to placental insufficiency and to deliver them before they reduce neonatal morbidity and mortality. The objective is to find out the prevalence of late onset IUGR fetuses and to study the predictors of it.

Material and Methods

The present study is a prospective observational study conducted in JK Lone hospital from September 18 to August 19. All singleton pregnant patients with vertex presentation (after 34 weeks) undergoing regular antenatal check up with accurate dates of which the cases which were diagnosed of late onset IUGR were taken and followed till delivery. Autoimmune disease, Eclampsia, multiple pregnancy, malpresentation & constituitionally small babies were excluded. Late fetal growth was considered when EFW is less than 10th percentile and after 34 weeks of gestation. Once diagnosis of late onset IUGR was made, weekly follow ups were done and following parameters were studied-

1) Estimated Fetal weight
2) Amniotic fluid index
3) Cardiotocography
4) Umbilical artery pulsatility index (UA-PI)

5) Uterine artery pulsatility index (UtA-PI)
6) Middle cerebral artery pulsatility index (MCA-PI)
7) Cerebroplacental Ratio (CPR)

Result

The prevalence of Late onset IUGR diagnosed in our institution was 2.44%.

Age-Majority of the women (53.84%) we're in the age group 25-29 years followed by 25.81% of 30-35 years. mean age was 27.58%. Minimum maternal age was 18 and maximum was 35 years.

Age Groups	n(%)
15-19	1(1.61%)
20-24	11(17.74%)
25-29	34(54.84%)
30-35	16(25.81%)
Total	62(100%)

Socioeconomic status- All (100%) of the women belonged to the low socioeconomic status. None of the subjects were in upper middle and upper Socioeconomic status.

Socioeconomic Status	n(%)
Lower	38(61.29%)
Lower middle	24(38.71%)
Upper middle	-
Upper	-
Total	62(100%)

Weight Gain- Majority (85.48%) of the women had weight gain less than 8 kg during pregnancy. Mean weight gain was 6.55kg.

Weight gain	n(%)
<5.0 kg	19(19.35%)
5.1-8.0 kg	41(66.13%)
8.1-10kg	9(14.52%)
10.1-15kg	-
Total	62(100%)

Parity

Parity	n(%)
1	11(17.74%)
2	28(45.16%)
3	17(27.42,%)
4	6(9.67%)
Total	62(100%)

Risk Factors - The most prevalent risk Factors were anaemia (58.06%) and gestational hypertension (54.84%).

Risk Factors	n(%)
Anaemia	36(58.06%)
Gestational hypertension	34(54.84%)
Sickling	23(37.10%)
Gestational Diabetes	12(19.35%)
Previous IUGR	10(16.13%)
Jaundice	2(3.23%)

USG parameters- In our study, out of 62 patients,26 had AFI <5 and 30 patients were with abnormal CTG. Out of 62 patients ,34 had abnormal Umbilical Artery pulsatility index and 12 had abnormal Uterine Artery pulsatility index. out of 62 patients, 25 had abnormal Middle Cerebral Artery pulsatility index.

Hundred percent babies had birth weight less than 2 kg.

Discussion

AFI- Our study is in accordance with Phelen et al who defined AFI <5 as oligohydramnios and it is correlated with increased perinatal morbidity. Simpson and Creasy et al observed in their study that serial USG to assess amniotic fluid volume and interval fetal growth are important. Thus in high risk pregnancies serial USG for AFI should be done so patients can be instructed on preventive measures like bed rest and empirical fluid intake.

CTG- In our study out of 62 patients, 30 had abnormal CTG. Our study correlates with study by Flynn et al in which out of 567 Patients, 300 had non reactive CTG. In this study 22 cases were diagnosed of IUGR out of which 14 had abnormal CTG.

UA-PI-our study is in concordance with study by MCCOWAN et al that UA-PI does not serve as predictor for IUGR.

Conclusion

Weight gain seems to be a very strong prognostic factor in terms of association with IUGR, so diagnosis should be made at an earliest. The simple tests like AFI by USG and CTG are still very useful to monitor a case of late onset IUGR.